



**PLATTE RIVER
POWER AUTHORITY**
Estes Park • Fort Collins • Longmont • Loveland

March 23, 2000

Mr. William Grimley
Emission Measurement Center (MD-19)
U.S. Environmental Protection Agency
Research Triangle Park, North Carolina 27711

Attn: Electric Utility Steam Generating Unit Mercury Test Program

Dear Mr. Grimley:

In accordance with the EPA's Mercury Emissions Information Collection Request requirements for Rawhide Unit One, we are submitting three (3) copies of the Speciated Mercury Emissions Testing report that was just received. This required mercury testing was performed by Mostardi-Platt on August 25 and 26, 1999.

After reviewing the report there are apparent discrepancies between the mercury emissions rates measured during the testing and the emission rates calculated from the coal analysis. The testing results from the scrubber inlet location indicated nearly twice the mercury emission rate as that calculated from the coal analysis. The stack location testing results show a mercury emission rate nearly 25 percent higher than the rate calculated from the coal analysis.

In addition to identifying the discrepancies noted above, Platte River Power Authority also wants it known that the mercury emission rates calculated from the coal analysis cannot be considered representative of what is normally being emitted from Rawhide. Analysis of the coal samples taken during the required mercury emissions testing showed mercury concentrations that were among the highest of what was measured during the year of required coal sampling and analysis.

Though Platte River has serious concerns about the testing discrepancies, we do believe the testing results provide a reasonable indication of the effectiveness of the plant's emission control equipment to remove mercury from the flue gas. Instead of using the flawed test results, we believe more realistic mercury emissions estimates may be calculated using removal efficiencies shown from the flue gas testing and the more representative coal mercury measurements obtained during the past year of coal sampling.

If you have any questions or comments, please contact me by phone at (970) 229-5200 or by email at moeckb@prpa.org.

Sincerely,

Brian H. Moeck
General Manager,
PRPA Designated Representative

Enclosures

SPECIATED MERCURY EMISSIONS TESTING

Performed For
PLATTE RIVER POWER AUTHORITY

At The
Rawhide Energy Station
Unit 101
SDA Inlet and Baghouse Outlet
Wellington, Colorado

August 25 and 26, 1999



Mostardi-Platt Associates, Inc.
A Full-Service
Environmental Consulting
Company

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MOSTARDI PLATT PROJECT 93405
DATE SUBMITTED: FEBRUARY 23, 2000

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LIST OF PARTICIPANTS

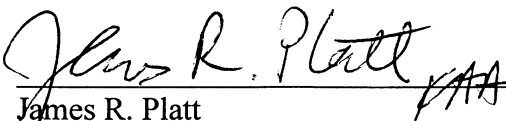
<u>Name</u>	<u>Organization</u>	<u>Project Role</u>
Paul Schulz.....	Platte Rive Power Authority.....	Plant Coordinator
James R. Platt	Mostardi Platt	Vice President
Paul F. Coleman	Mostardi Platt	Project Manager
Jeffery C. Daniels	Mostardi Platt	Project Supervisor
John Wendell.....	Mostardi Platt	Laboratory Chemist
Norm Smith	Mostardi Platt	Test Technician
Chris Mirecki.....	Mostardi Platt	Test Technician
Gayle O'Neill, Ph.D.	TEI Analytical, Inc.	Speciated Hg Sample Analysis
Joseph Houser.....	CTE	Coal Sample Analysis

CERTIFICATION SHEET

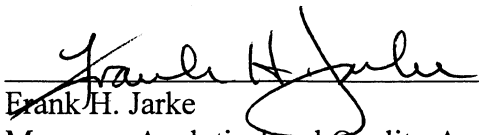
Having supervised and worked on the test program described in this report, and having written this report, I hereby certify the data, information, and results in this report to be accurate and true according to the methods and procedures used.

Data collected under the supervision of others is included in this report and is presumed to have been gathered in accordance with recognized standards.

MOSTARDI-PLATT ASSOCIATES, INC.


James R. Platt
Vice President, Emissions Services

Reviewed by:


Frank H. Jarke
Manager, Analytical and Quality Assurance



SPECIATED MERCURY EMISSIONS TESTING

Performed For

PLATTE RIVER POWER AUTHORITY

At The

Rawhide Energy Station

Unit 101

SDA Inlet and Baghouse Outlet

Wellington, Colorado

August 25 and 26, 1999

1.0 INTRODUCTION

1.1 Summary of Test Program

The United States Environmental Protection Agency (USEPA), is using its authority under section 114 of the Clean Air Act, as amended, to require that selected coal-fired utility steam generating units provide certain information that will allow the USEPA to calculate the annual mercury emissions from each unit. This information will assist the USEPA Administrator in determining whether it is appropriate and necessary to regulate emissions of Hazardous Air Pollutants (HAPs) from electric utility steam generating units. The Emission Measurement Branch (EMB) of the Office of Air Quality Planning and Standards (OAQPS) oversees the emission measurement activities. MOSTARDI-PLATT ASSOCIATES, INC. (Mostardi Platt) conducted the mercury emission measurements.

The USEPA selected the Rawhide Energy Station of Platte River Power Authority in Wellington, Colorado to be one of seventy-eight coal-fired utility steam generating units to conduct mercury emissions measurements. Testing was performed at Unit 101 on August 25 and 26, 1999, which is the only unit at this facility. Simultaneous measurements were conducted at the Spray Dry Absorber (SDA) inlet and baghouse outlet (stack) and mercury emissions were speciated into elemental, oxidized and particle-bound mercury using the Ontario-Hydro test method. Fuel samples were also collected concurrently with Ontario-Hydro samples in order to determine fuel mercury content.

1.2 Key Personnel

The key personnel who coordinated the test program and their telephone numbers are:

- Mostardi Platt Vice President, James Platt 630-993-9000
- Platte River Power Authority, Paul Schulz 970-229-1762

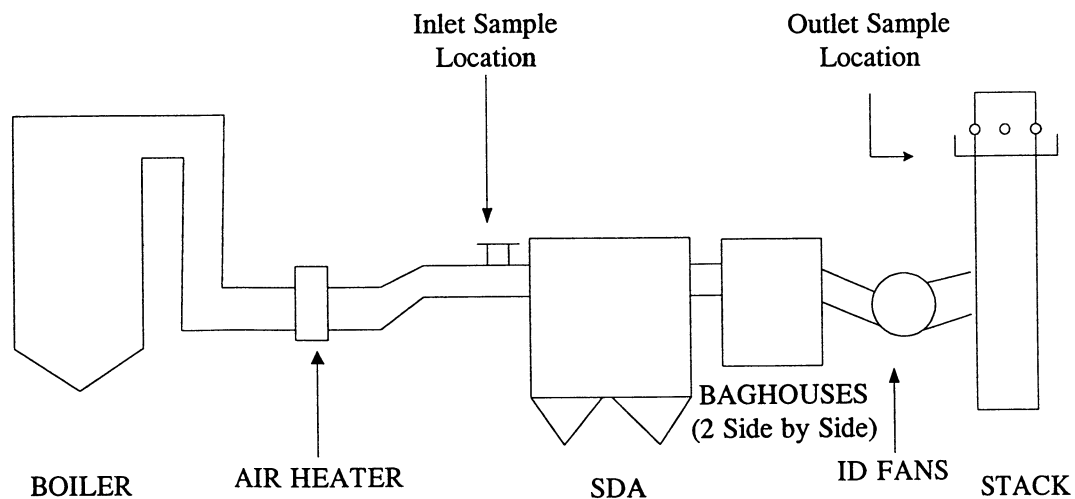
2.0 PLANT AND SAMPLING LOCATION DESCRIPTIONS

2.1 Process Description

Rawhide Unit 101 is a pulverized coal-fired boiler with a name plate rating of 295 MW (gross). Figure 2-1 shows a schematic of the boiler and pollution control equipment, including sample points.

Unit 101 is a coal burning steam boiler. The steam is converted into mechanical energy by flowing through a turbine (generator) which produces electrical power. The unit was operating at or near full load during the tests. Fuel type, boiler operation and control device operation were all maintained at normal operating conditions.

Figure 2-1 Schematic of the Boiler and Pollution Control Equipment.



The following is a list of operating components for this unit:

- Combustion Engineering tangentially fired, dry bottom boiler
- 295 MW gross capacity (Name plate rating)

- Fuel:
 - Subbituminous Powder River Basin coal, 0.28% Sulfur
- SO₂ control: Joy/Niro Spray Dry Absorber
- NO_x control: Combustion engineering low NO_x concentric firing burners and over-fire air
- Joy/Niro Fabric Filter Baghouses (2)

2.2 Control Equipment Description

Particulate emissions are contained by two (2) side by side 12-compartment Joy/Niro Fabric Filter Baghouses. Each baghouse compartment contained 274 individual bags. The bags are cleaned by reverse air. The baghouse has an estimated collection efficiency of 99.9%.

The flue gas at the inlet is approximately 310°F. At the stack, the gas temperature is approximately 200°F and contains approximately 12 percent (12%) moisture.

2.3 Flue Gas Sampling Locations

2.3.1 Inlet Location

Inlet samples were collected at the SDA inlet. A schematic and cross section of the inlet location are shown in Figure 2-2. This location does not meet the requirements of USEPA Method 1.

Due to the configuration of the inlet duct, a 12-foot glass-lined probe was used to sample vertically down into the duct. The mass emission rates were calculated utilizing the outlet flow.

2.3.2 Outlet Location

Outlet samples were collected at the stack sample ports. A schematic and cross section of the stack location is shown in Figure 2-3. This location does meet the requirements of USEPA Method 1.

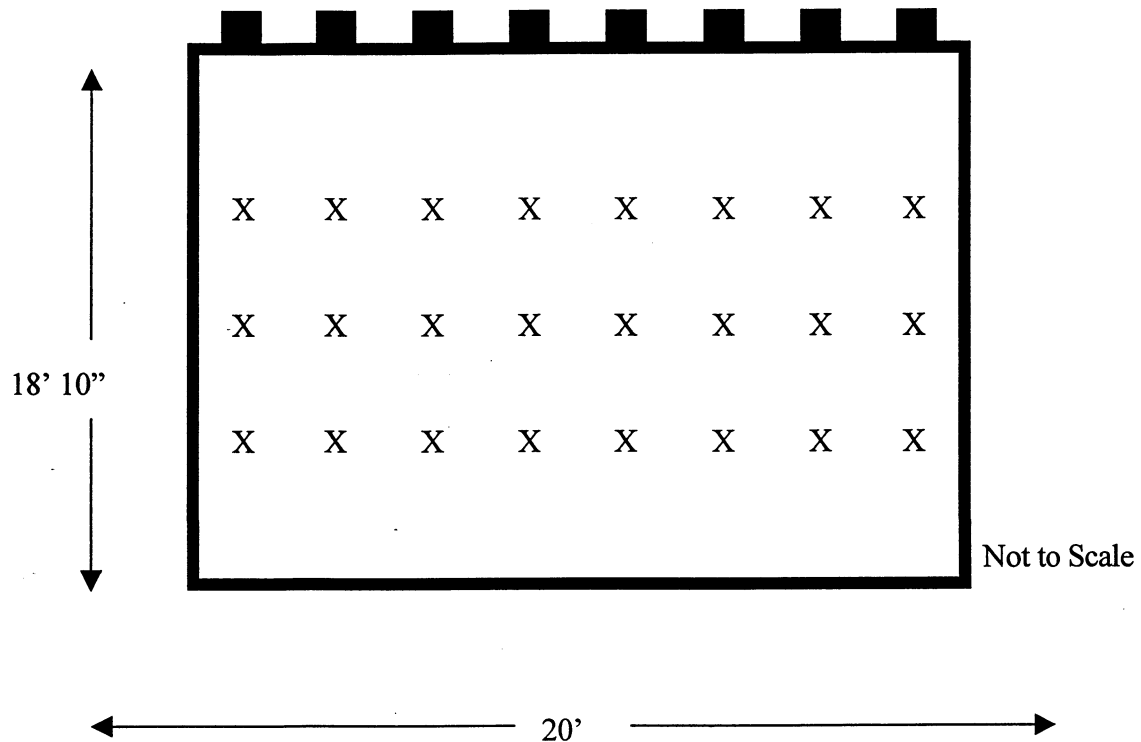
The flue gas at the outlet was below the method specification of a minimum filtration temperature of 120°C. Therefore, out of stack filtration per Method 5 will be used.

2.4 Fuel Sampling Location

Fuel samples were taken at the plant Coal Crusher facility six (6) hours prior to the start of each test. The plant's "as-fired" coal sampling system was used. The time delay between coal sampling and flue gas testing insured that fuel analysis was representative of the test conditions. One (1) sample was taken for each mercury speciation test. A schematic of the coal handling system is shown in Figure 2-4.

Figure 2-2 Schematic of the Facility SDA Inlet Sampling Location

EQUAL AREA TRAVERSE FOR RECTANGULAR DUCTS



Job: Platt River Power Authority
Rawhide Energy Station
Wellington, Colorado

Date: August 24 and 25, 1999

Area: 376.67 Square Feet

Unit No: 101

No. Test Ports: 8

Length: 18 Feet, 10 Inches

Tests Points per Port: 3

Width: 20 Feet

Distance Between Ports: 32 Inches

Duct No: SDA Inlet

Distance Between Points: 4 Feet

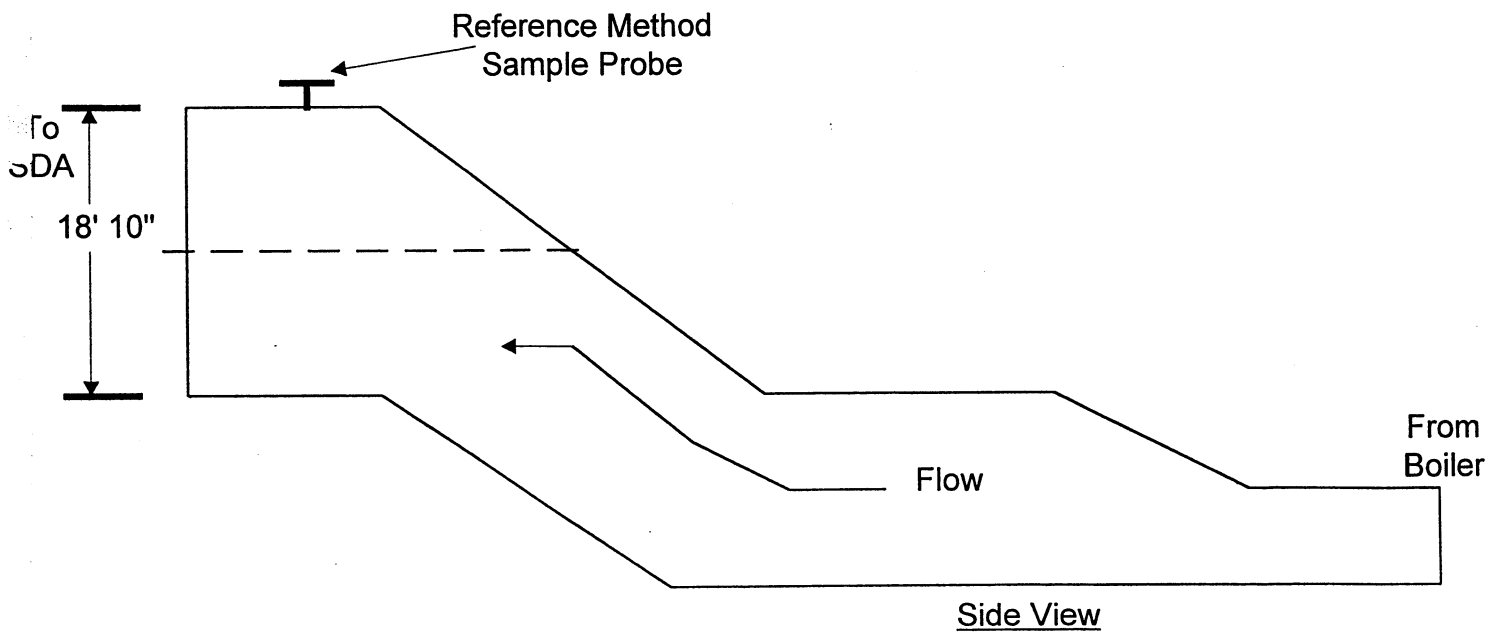
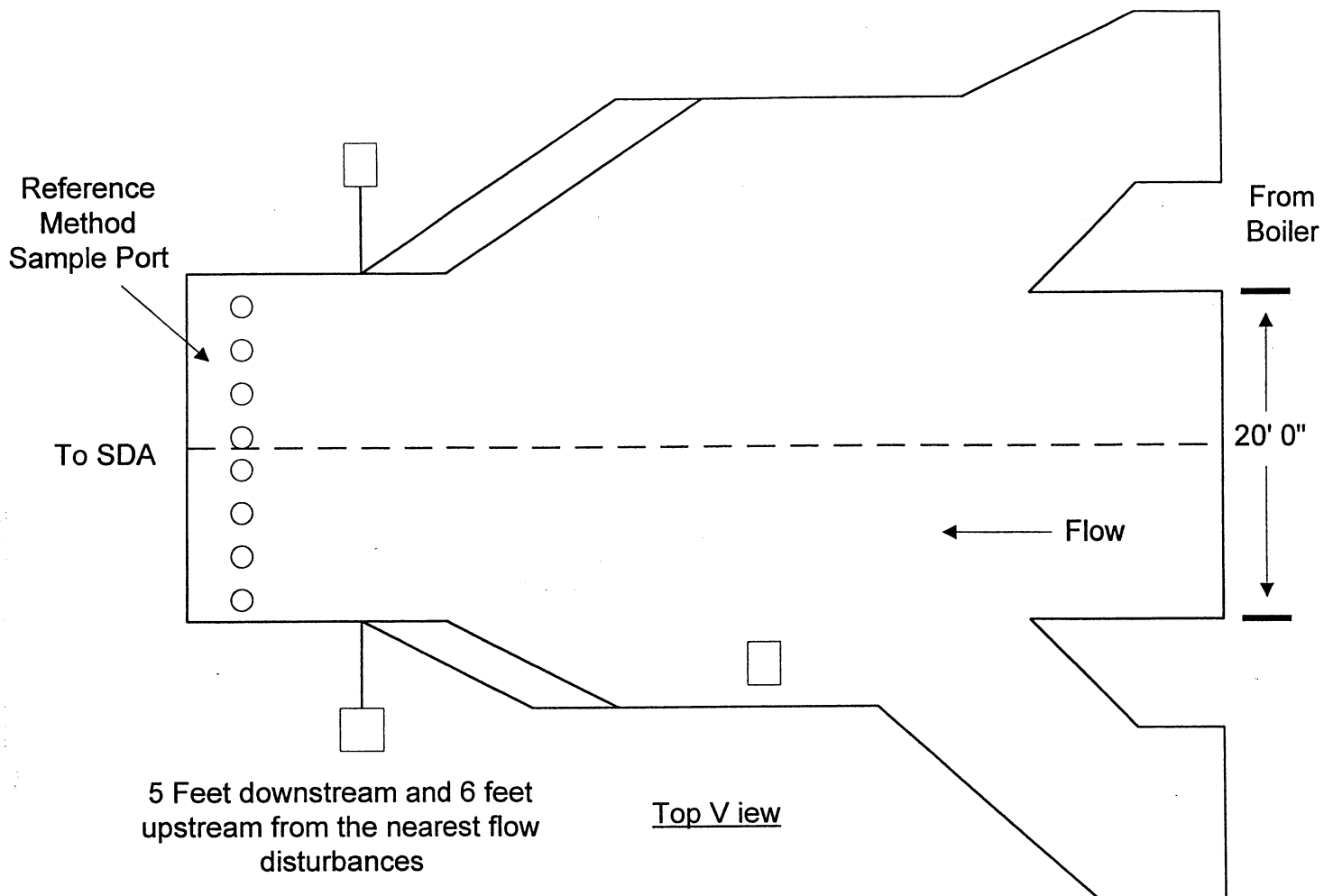
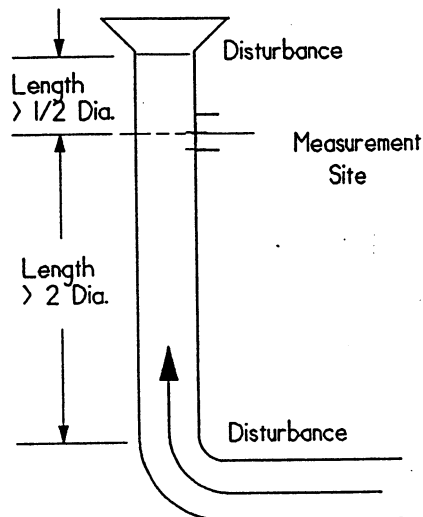
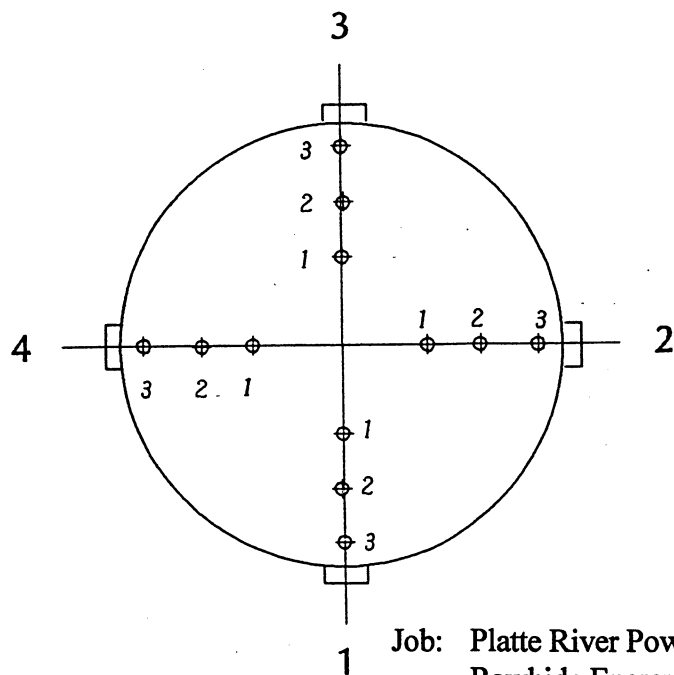


Figure 2- 3 Schematic of the Facility Baghouse Outlet Sampling Location

EQUAL AREA TRAVERSE FOR ROUND DUCTS



Job: Platte River Power Authority
Rawhide Energy Station
Wellington, Colorado

Date: August 24 and 25, 1999

Unit No: 101

Duct No: 20 Feet

Duct Diameter: Stack

Duct Area: 314.16 Square Feet

No. Points Across Diameter: 6

No. of Ports: 4

Port Length: 17 Inches



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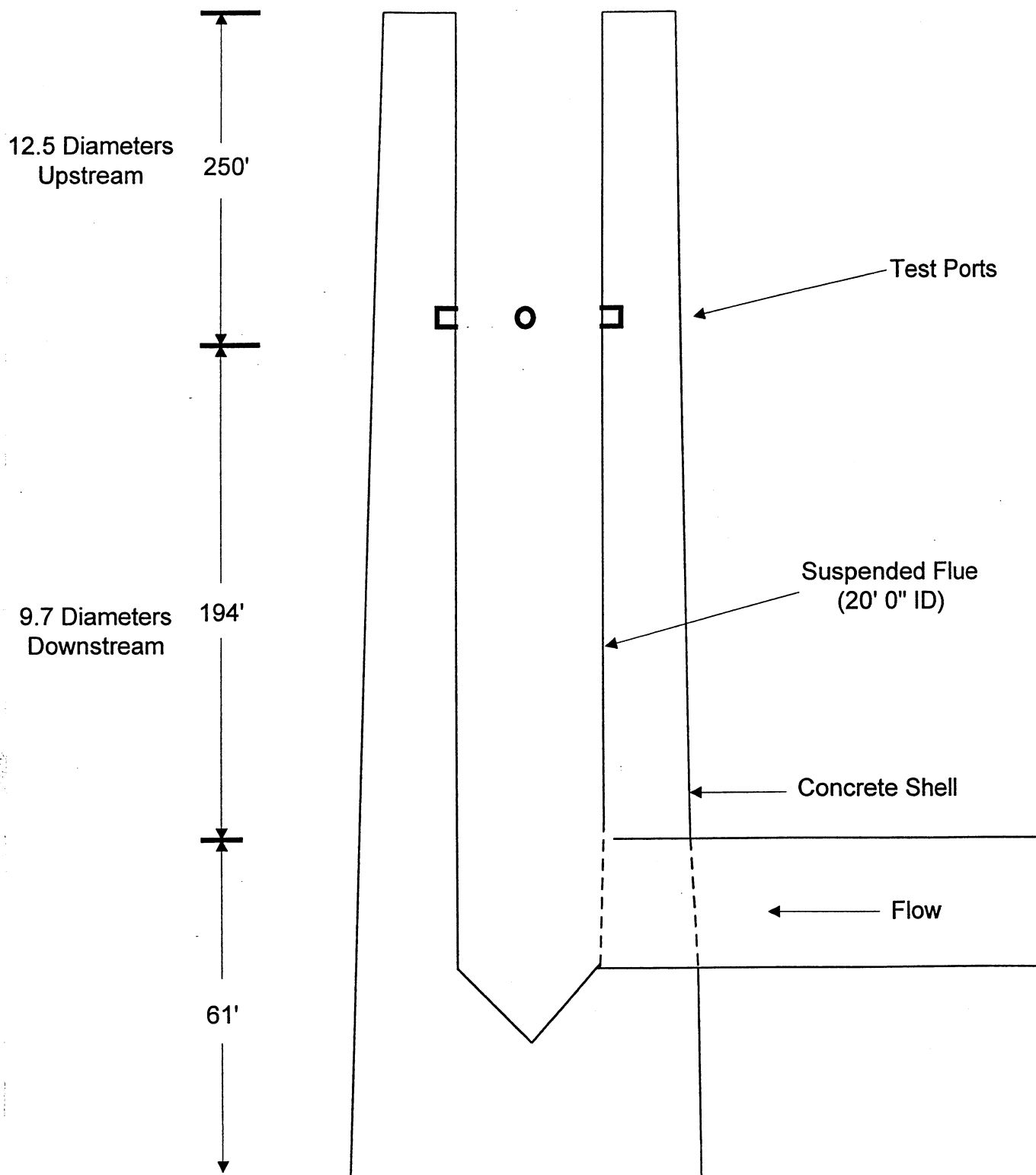
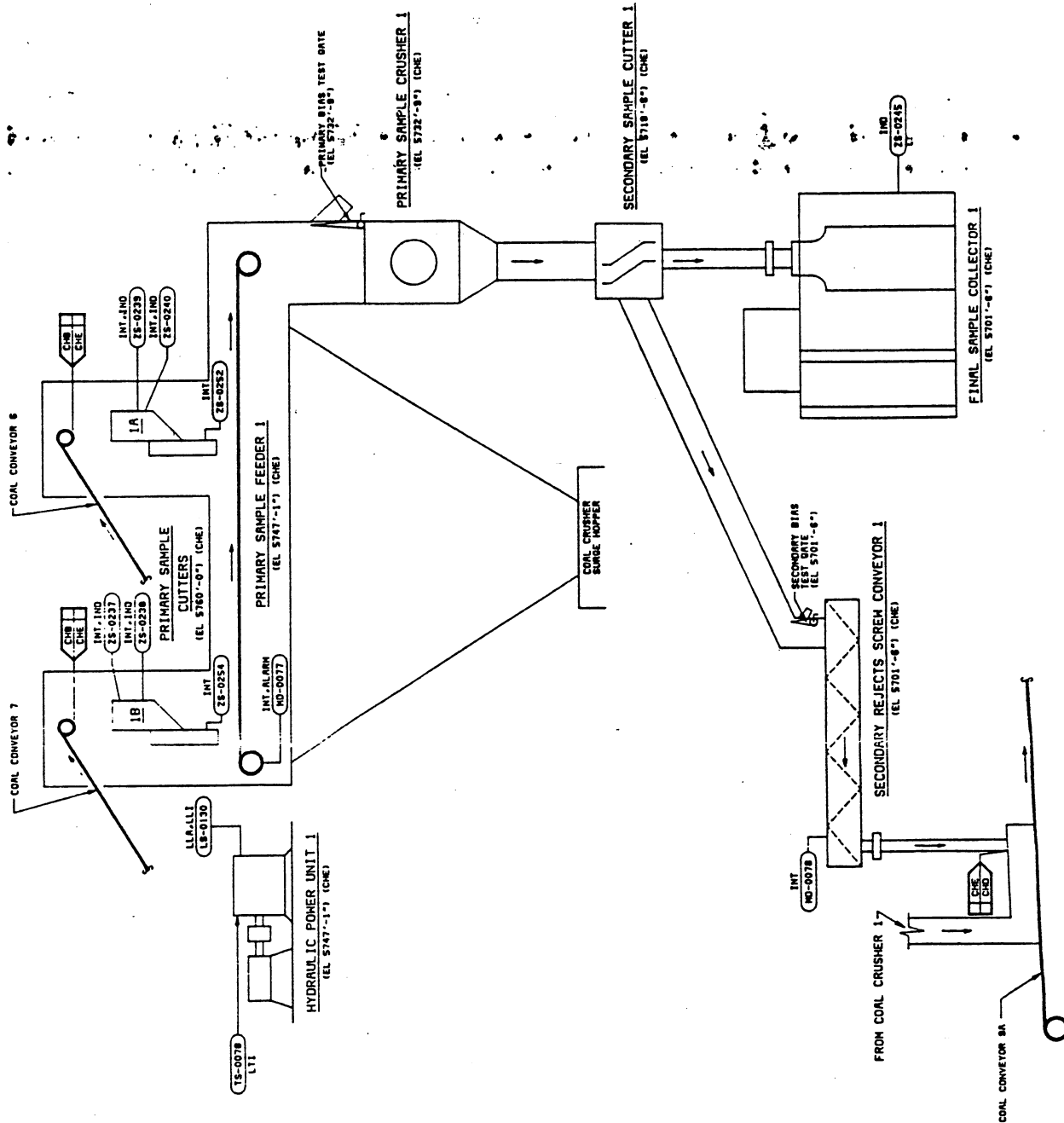


Figure 2- 4 Schematic of the Facility Coal Handling System

Coal Handling System



SYSTEM CODE: CHE
ALL EQUIPMENT INDICATED IS
LOCATED IN THE COAL CRUSHER BUILDING

Black & Veatch
CONSULTING ENGINEERS
PROJECT
7750

Pittsburgh
CONSULTING ENGINEERS
PROJECT
7750



DATE 02-01-83
REVISIONS

NO.	DATE	BY	CHK	APP	DESCRIPTION
1	07-15-84	CONFORMED TO CONSTR. REC. IN CH.			
2	02-01-83	RELEASED FOR CONSTRUCTION			

INT	RD-0078				
CHE	25-0237				
CHE	25-0238				
CHE	25-0239				
CHE	25-0240				
CHE	25-0252				
CHE	RD-0077				
CHE	25-0253				
CHE	25-0245				

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3.0 SUMMARY AND DISCUSSION OF TEST RESULTS

3.1 Objectives and Test Matrix

The purpose of the test program was to quantify mercury emissions from this unit. This information will assist the USEPA Administrator in determining whether it is appropriate and necessary to regulate emissions of Hazardous Air Pollutants (HAPs) from electric utility steam generating units. The specific objectives, in order of priority were:

- Compare mass flow rates of mercury at the three sampling locations (fuel, SDA inlet and baghouse outlet).
- Measure speciated mercury emissions at the outlet.
- Measure speciated mercury concentrations at the inlet of the last air pollution control device.
- Measure mercury and chlorine content from the fuel being used during the testing.
- Measure the oxygen and carbon dioxide concentrations at the inlet and the outlet.
- Measure the volumetric gas flow at the inlet and the outlet.
- Measure the moisture content of the flue gas at the inlet and the outlet.
- Provide the above information to the USEPA for use in establishing mercury emission factors for this type of unit.

The test matrix is presented in Table 3-1. The table shows the testing performed at each location, methodologies employed and responsible organization.

<p style="text-align: center;">Table 3-1 TEST MATRIX FOR THE RAWHIDE ENERGY STATION</p>						
Sampling Location	No. of Runs	Parameters	Sampling Method	Sample Run Time (min)	Analytical Method	Analytical Laboratory
Outlet	3	Speciated Hg	Ontario Hydro	120	EPA SW846 7470	TEI
Outlet	3	Moisture	EPA 4	120	Gravimetric	Mostardi Platt
Outlet	3	Flow	EPA 1 & 2	120	Pitot Traverse	Mostardi Platt
Outlet	3	O ₂ /CO ₂	EPA 3	120	Orsat	Mostardi Platt
Inlet	3	Speciated Hg	Ontario Hydro	120	EPA SW846 7470	TEI
Inlet	3	Moisture	EPA 4	120	Gravimetric	Mostardi Platt
Inlet	3	Flow	EPA 1 & 2	120	Pitot Traverse	Mostardi Platt
Inlet	3	O ₂ /CO ₂	EPA 3	120	Orsat	Mostardi Platt
Fuel Feeders	3	Hg, Cl in Fuel	Grab	1 Sample Per Feeder Per Run	ASTM D3684 (Hg) ASTM D4208 (Cl)	CTE

3.2 Field Test Changes and Problems

There were no field test changes or problems encountered during this test program.

3.3 Presentation of Results

3.3.1 Mercury Mass Flow Rates

The mass flow rates of mercury determined at each sample location are presented in Table 3-2.

Table 3- 2 SUMMARY OF RESULTS				
Sample Location	Elemental Mercury (lb/hr)	Oxidized Mercury (lb/hr)	Particle-Bound Mercury (lb/hr)	Total Mercury (lb/hr)
<u>Fuel</u>				
Run 1				0.01715
Run 2				0.01591
Run 3				0.01861
Average				0.01722
<u>SDA Inlet</u>				
Run 1	0.02642	0.00293	0.00052	0.02987
Run 2	0.02790	0.00178	0.00417	0.03385
Run 3	0.02979	0.00091	0.00759	0.03829
Average	0.02804	0.00187	0.00409	0.03401
<u>Baghouse Outlet</u>				
Run 1	0.02160	0.00150	0.00048	0.02359
Run 2	0.01985	0.00137	0.00002	0.02124
Run 3	0.01767	0.00193	0.00013	0.01972
Average	0.01971	0.00160	0.00021	0.02152

3.3.2 Comparison of Volumetric Flow Rate

Volumetric flow rate is a critical factor in calculating mass flow rates. Ideally, the volumetric flow rate (corrected to standard pressure and temperature) measured at the inlet to the control device should be the same as that measured at the stack, which should be the same as that measured by the CEMS. Table 3-3 lists the comparison of flow rates of the three locations on a thousand standard cubic foot per minute basis (KSCFM).

<p align="center">Table 3-3 COMPARISON OF VOLUMETRIC FLOW RATE DATA</p>							
Run No.	SDA Inlet			Baghouse Outlet			CEMS
	KACFM	KSCFM	KDSCFM	KACFM	KSCFM	KDSCFM	KSCFM
Run 1	1147.082	598.318	522.631	1165.142	734.724	640.826	763.251
Run 2	1100.743	575.040	501.090	1179.889	741.784	621.096	760.619
Run 3	1053.451	555.421	487.271	1173.278	750.106	628.664	755.369
Average	1100.425	576.260	503.664	1172.770	742.205	630.195	759.746

The measured volumetric flow rate (KSCFM) at the inlet was approximately 22% lower than that measured at the outlet. The difference of the measured flow rate (KSCFM) at the outlet was within 3% of that determined by the continuous emissions monitoring system (CEMS). Because the inlet location did not meet the requirements of USEPA Method 1, the outlet volumetric flow rates were used to determine the emission rates at the inlet.

3.3.3 Individual Run Results

A detailed summary of results for each sample run at the SDA inlet and baghouse outlet are presented in Tables 3-4 and 3-5, respectively.

3.3.4 Process Operating Data

The process operating data collected during the tests is included in Appendix A. A summary of the coal usage and mass emission rate of mercury available from coal are presented in Table 3-6.

Table 3- 4
SDA INLET INDIVIDUAL RUN RESULTS

Test Run Number:	1	2	3	Average
Source Condition	Normal			
Fuel Factor, dscf/10 ⁶ Btu	9856	9854	9907	
Date	8/24/99	8/24/99	8/25/99	
Start Time	10:40	14:17	8:45	
End Time	12:56	16:42	11:00	
Elemental Mercury:				
ug detected	16.076	17.596	17.536	17.069
ug/dscm	11.01	11.99	12.65	11.89
lb/hr	0.02154	0.02251	0.02309	0.02238
lb/hr (based on outlet dscfm)	0.02642	0.02790	0.02979	0.02804
lb/10 ¹² Btu	8.97	9.23	10.69	9.63
Oxidized Mercury:				
ug detected	1.784	1.124	0.536	1.148
ug/dscm	1.22	0.77	0.39	0.79
lb/hr	0.00239	0.00144	0.00071	0.00151
lb/hr (based on outlet dscfm)	0.00293	0.00178	0.00091	0.00187
lb/10 ¹² Btu	1.00	0.59	0.33	0.64
Particle-bound Mercury:				
ug detected	0.318	2.632	4.466	2.472
ug/dscm	0.22	1.79	3.22	1.74
lb/hr	0.00043	0.00337	0.00588	0.00322
lb/hr (based on outlet dscfm)	0.00052	0.00417	0.00759	0.00409
lb/10 ¹² Btu	0.18	1.38	2.72	1.43
Total Inlet Speciated Mercury:				
ug/dscm	12.45	14.55	16.26	14.42
lb/hr	0.02436	0.02731	0.02968	0.02712
lb/hr (based on outlet dscfm)	0.02987	0.03385	0.03829	0.03401
lb/10 ¹² Btu	10.15	11.20	13.74	11.70
Average Gas Volumetric Flow Rate:				
@ Flue Conditions, acfm	1,147,082	1,100,743	1,053,451	1,100,425
@ Standard Conditions, dscfm	522,631	501,090	487,271	503,664
Average Gas Temperature, °F	340.1	338.9	340.0	339.7
Average Gas Velocity, ft/sec	50.76	48.71	46.61	48.69
Flue Gas Moisture, percent by volume	12.65	12.86	12.27	12.59
Average Flue Pressure, in. Hg	23.65	23.65	23.90	
Barometric Pressure, in. Hg	24.55	24.55	24.80	
Average %CO ₂ by volume, dry basis	13.8	14.7	13.6	14.0
Average %O ₂ by volume, dry basis	5.1	4.2	5.6	5.0
% Excess Air	31.53	24.42	35.60	30.51
Dry Molecular Wt. of Gas, lb/lb-mole	30.413	30.525	30.400	
Gas Sample Volume, dscf	51.576	51.809	48.937	
Isokinetic Variance	98.7	103.4	100.4	

Table 3- 5
BAGHOUSE OUTLET INDIVIDUAL RUN RESULTS

Test Run Number:	1	2	3	Average
Source Condition	Normal			
Fuel Factor, dscf/10 ⁶ Btu	9856	9854	9907	
Date	8/24/99	8/24/99	8/25/99	
Start Time	10:45	14:10	8:45	
End Time	13:11	16:34	11:05	
Elemental Mercury:				
ug detected	11.086	10.606	9.274	10.322
ug/dscm	9.00	8.53	7.50	8.35
lb/hr	0.02160	0.01985	0.01767	0.01971
lb/10 ¹² Btu	7.78	7.14	6.51	7.14
Oxidized Mercury:				
ug detected	0.772	0.733	1.014	0.840
ug/dscm	0.63	0.59	0.82	0.68
lb/hr	0.00150	0.00137	0.00193	0.00160
lb/10 ¹² Btu	0.54	0.49	0.71	0.58
Particle-bound Mercury:				
ug detected	<0.249	<0.012	<0.069	<0.110
ug/dscm	0.20	0.01	0.05	0.09
lb/hr	0.00048	0.00002	0.00013	0.00021
lb/10 ¹² Btu	0.17	0.01	0.05	0.08
Total Outlet Speciated Mercury:				
ug/dscm	9.83	9.13	8.38	9.11
lb/hr	0.02359	0.02124	0.01972	0.02152
lb/10 ¹² Btu	8.50	7.64	7.27	7.80
Average Gas Volumetric Flow Rate:				
@ Flue Conditions, acfm	1,165,142	1,179,889	1,173,278	1,172,770
@ Standard Conditions, dscfm	640,826	621,096	628,664	630,195
Average Gas Temperature, °F	218.9	220.9	217.9	219.2
Average Gas Velocity, ft/sec	61.81	62.60	62.24	62.22
Flue Gas Moisture, percent by volume	12.78	16.27	16.19	15.08
Average Flue Pressure, in. Hg	24.26	24.26	24.56	
Barometric Pressure, in. Hg	24.30	24.30	24.60	
Average %CO ₂ by volume, dry basis	13.0	13.5	13.0	13.2
Average %O ₂ by volume, dry basis	6.0	5.5	6.0	5.9
% Excess Air	39.33	34.91	39.00	37.75
Dry Molecular Wt. of Gas, lb/lb-mole	30.321	30.376	30.320	
Gas Sample Volume, dscf	43.495	43.897	43.646	
Isokinetic Variance	100.6	104.8	102.9	

Table 3- 6
COAL USAGE RESULTS

Test Run Number:	1	2	3	Average
Source Condition	Normal			
Date	8/24/99	8/24/99	8/25/99	
Start Time	10:45	14:10	8:45	
End Time	13:11	16:34	11:05	
Coal Properties:				
Carbon, % dry	69.93	70.32	70.39	70.21
Hydrogen, % dry	4.76	4.89	4.82	4.82
Nitrogen, % dry	1.05	1.04	1.04	1.04
Sulfur, % dry	0.31	0.30	0.30	0.30
Ash, % dry	7.26	7.31	7.48	7.35
Oxygen, % dry (by difference)	16.69	16.14	15.97	16.27
Volatile, % dry	43.21	42.45	42.98	42.88
Moisture, %	20.51	25.55	23.44	23.17
Heat Content, Btu/lb dry basis	11867	12003	11932	11934
F _d Factor O ₂ basis, dscf/10 ⁶ Btu	9856	9854	9907	9873
F _c Factor CO ₂ basis, scf/10 ⁶ Btu	1892	1881	1894	1889
Chloride, ug/g dry	133.0	118.0	129.0	126.7
Mercury, ug/g dry	0.07	0.07	0.08	0.07
Coal Consumption:				
Total Raw Coal Input, Klbs/hr	308.194	305.315	303.852	305.79
Total Coal Input, lbs/hr dry	244983	227307	232629	234973
Total Mercury Available in Coal:				
Mercury, lbs/hr	0.01715	0.01591	0.01861	0.01722
Mercury, lbs/10 ¹² Btu	5.90	5.83	6.70	6.15

4.0 SAMPLING AND ANALYTICAL PROCEDURES

4.1 Test Methods

4.1.1 Speciated mercury emissions

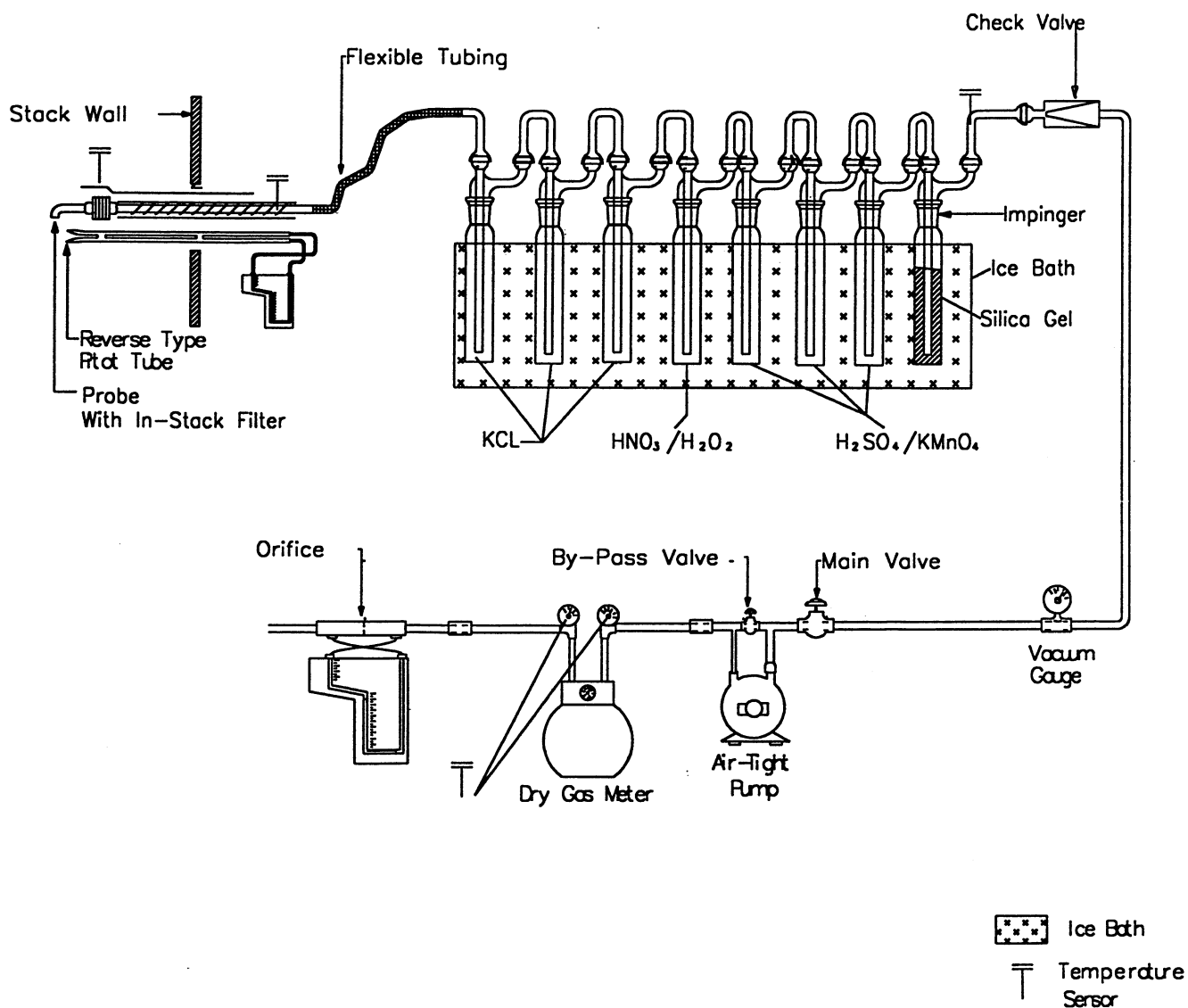
Speciated mercury emissions were determined via the draft "Standard Test Method for Elemental, Particle-Bound, and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario-Hydro Method)", dated April 8, 1999. Any revisions to this test method issued after April 8, 1999, but before July 1, 1999, were incorporated.

The in-stack filtration (Method 17) configuration was utilized at the SDA inlet location. The out-of-stack filtration (Method 5) configuration was utilized at the stack. Figures 4-1 and 4-2 are schematics of the Ontario-Hydro sampling trains.

Figure 4-3 illustrates the sample recovery procedure. The analytical scheme was per Section 13.3 of the Ontario-Hydro Method.

Speciated Mercury Sampling Train Equipped with In-Stack Filter

Ontario Hydro Method



Mostardi Platt

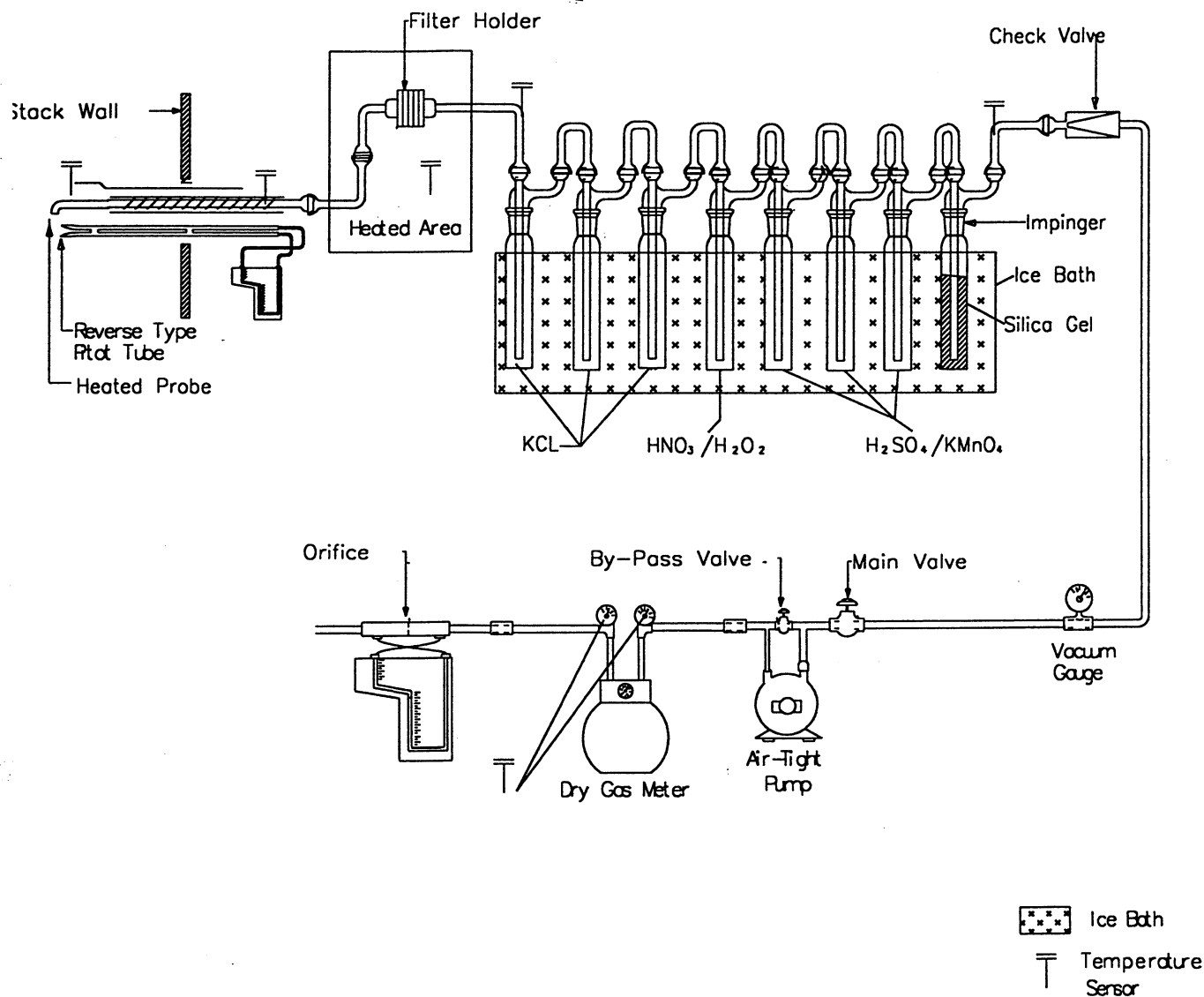
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Speciated Mercury Sampling Train Equipped with Out-of-Stack Filter

Ontario Hydro Method



Mostardi Platt

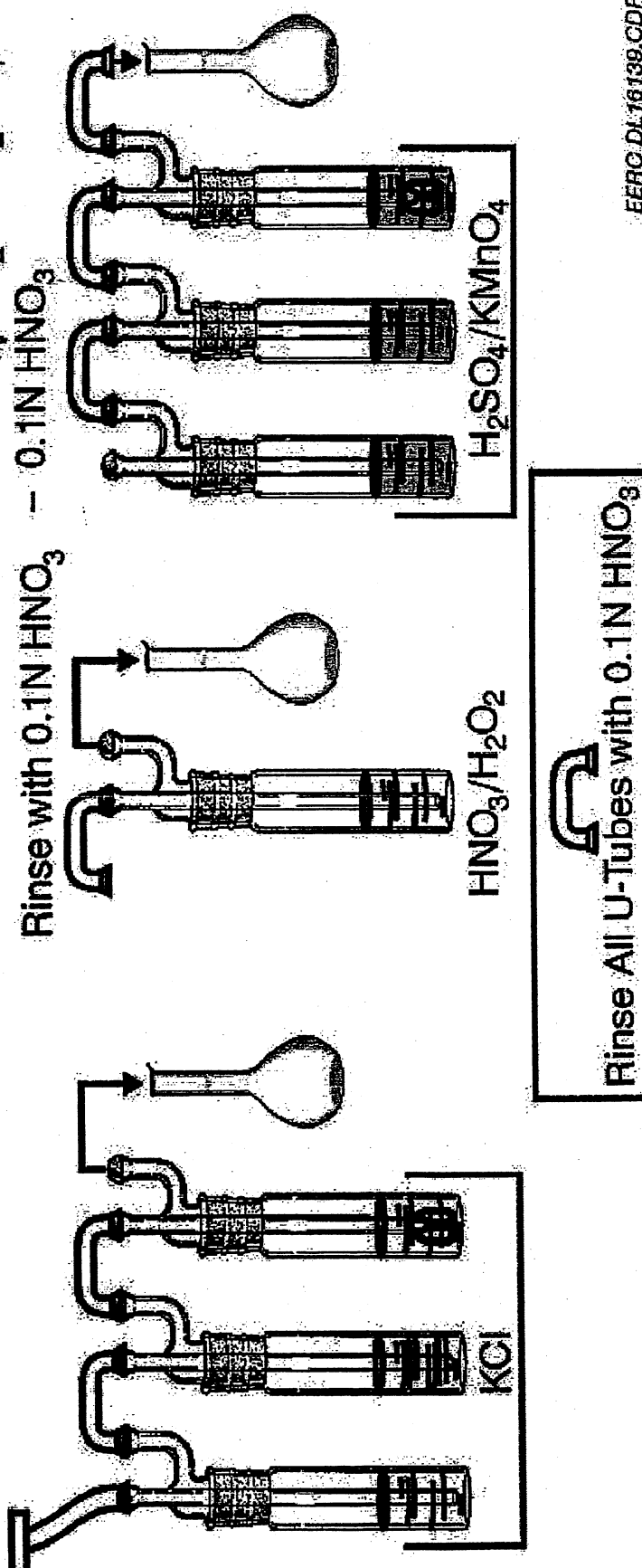
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1. Rinse filter holder and connector with 0.1N HNO_3 .
2. Add 5% w/v KMnO_4 to each impinger bottle until purple color remains.
3. Rinse with 10% v/v HNO_3 .
4. Rinse with a very small amount of 10% w/v $\text{NH}_2\text{OH}\cdot\text{H}_2\text{SO}_4$ if brown residue remains.
5. Final rinse with 10% v/v HNO_3 .

Rinse Bottles Sparingly with

- 0.1N HNO_3
- 10% w/v $\text{NH}_2\text{OH}\cdot\text{H}_2\text{SO}_4$
- 0.1N HNO_3



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Figure 4-3: Sample Recovery Scheme for Ontario-Hydro Method Samples

4.1.2 Fuel samples

Fuel samples were collected at the coal crusher using the plant's automatic "As Fired" sampling system. Three samples were collected at equally spaced intervals during each speciated mercury sampling run. Each set of three samples was composited into a single sample for each sample run. Sample analysis was conducted according to the procedures of ASTM D3694 and ASTM D4208.

4.2 Procedures for Obtaining Process Data

Plant personnel were responsible for obtaining process-operating data. The process data, which can be found in Appendix A, was continuously monitored by the facility.

4.3 Sample Identification and Custody

The chain-of-custody for all samples obtained for analysis can be found in Appendix E.

5.0 INTERNAL QA/QC ACTIVITIES

All sampling, recovery and analytical procedures conform to those described in the site specific test plan. All resultant data was reviewed by the laboratory and Mostardi Platt per the requirements listed in the QAPP and were determined to be valid except where noted below.

5.1 QA/QC Problems

Reagent blanks are required to be less than ten times the detection limit or ten percent of the sample values found.

The reagent blanks, Sample IDs #041 and #042, for $\text{KMNO}_4/\text{H}_2\text{SO}_4$ were found to be 1.05 μg and 0.088 μg respectively, which in each case is more than ten times the detection limit of 0.003 μg . These values however, are less than ten percent of the results for the $\text{KMNO}_4/\text{H}_2\text{SO}_4$ impingers and therefore the data does not need to be qualified.

5.2 QA Audits

5.2.1 Reagent Blanks

As required by the method, blanks were collected for all reagents utilized. The results of reagent blank analysis are presented in Table 5-1.

Table 5- 1 REAGENT BLANK ANALYSIS				
Container #	Sample Fraction	Contents	Mercury (µg)	Detection Limit (µg)
037	Front-half	0.1N HNO ₃ /Filter	< 0.003	0.003
038	1 N KCl	1 N KCl	0.006	0.003
039	HNO ₃ /H ₂ O ₂	HNO ₃ /H ₂ O ₂	0.015	0.008
041	KMnO ₄ /H ₂ SO ₄	KMnO ₄ /H ₂ SO ₄	1.05	0.003
042	KMnO ₄ /H ₂ SO ₄	KMnO ₄ /H ₂ SO ₄	0.088	0.003

5.2.2 Blank Trains

As required by the method, blank trains were collected at both the inlet and stack sampling locations. These trains were collected on August 25, 1999. The results of blank train analysis are presented in Table 5-2.

Table 5- 2 BLANK TRAIN ANALYSIS				
Container #	Sample Fraction	Contents	Mercury (µg)	Detection Limit (µg)
031-036	Front-half	Filter/front-half rinse	0.040	0.002
025	KCl impingers	Impingers/rinse	0.173	0.03
028	KCl impingers	Impingers/rinse	0.162	0.03
026	HNO ₃ -H ₂ O ₂ impingers	Impingers/rinse	0.37	0.04
029	HNO ₃ -H ₂ O ₂ impingers	Impingers/rinse	0.66	0.04
027*	KMnO ₄ /H ₂ SO ₄ impingers	Impingers/rinse	N/A	0.03
030*	KMnO ₄ /H ₂ SO ₄ impingers	Impingers/rinse	N/A	0.03

* Sample was lost during the transfer.

5.2.3 Field Dry Test Meter Audit

The field dry test meter audit described in Section 4.4.1 of Method 5 was completed prior to the test. The results of the audit are presented in Appendix C.